Comparisons of Job Characteristics

Focus Occupation: Mining and Geological Engineers, Including Mining Safety Engineers (17-2151)
Associated Occupation: Materials Engineers (17-2131)

Compare Knowledge
Compare Skills
Compare Abilities
Compare Detailed Work Activities
Compare Tools and Technologies

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 77

Focus Occupation: Mining and Geological Engineers, Including Mining Safety Engineers (17-2151)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Engineering and Technology	5.7	18.9	20.6	0	Current knowledge level may be sufficient
Chemistry	4.8	15.3	10.2	<<	Extensive education and/or training may be required
Physics	4.3	10.6	11.4	0	Current knowledge level may be sufficient
Design	5.2	7.9	16.6	>>	Current knowledge level is likely more than sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 84

Focus Occupation: Mining and Geological Engineers, Including Mining Safety Engineers (17-2151)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Science	4.5	13.0	11.5	<	A higher skill level may be required
Complex Problem Solving	9.1	12.0	14.8	>	Skill level is likely sufficient
Operations Analysis	5.0	11.7	11.5	0	Current skill level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities

Similarity of Focus Occupation to Associated Occupation: 97

Focus Occupation: Mining and Geological Engineers, Including Mining Safety Engineers (17-2151)
Associated Occupation: Materials Engineers (17-2131)

Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Oral Expression	12.4	15.3	15.4	0	Current ability level may be sufficient
Problem Sensitivity	11.1	14.7	14.8	0	Current ability level may be sufficient
Deductive Reasoning	10.6	14.2	15.5	0	Current ability level may be sufficient
Written Comprehension	11.0	14.2	15.7	>	Current ability level is likely sufficient
Inductive Reasoning	10.2	13.9	14.1	0	Current ability level may be sufficient
Written Expression	9.8	13.8	15.1	0	Current ability level may be sufficient
Category Flexibility	9.0	11.5	13.8	>	Current ability level is likely sufficient
Originality	7.6	10.6	11.0	0	Current ability level may be sufficient
Mathematical Reasoning	6.3	10.2	12.8	>	Current ability level is likely sufficient
Number Facility	6.3	9.2	10.1	0	Current ability level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 91

Focus Occupation: Mining and Geological Engineers, Including Mining Safety Engineers (17-2151)
Associated Occupation: Materials Engineers (17-2131)

Work Activities	Exclusivity of Activity
Advise clients or customers	19
Advise clients regarding engineering problems	67
Analyze engineering design problems	69
Analyze engineering test data	71
Analyze project proposal to determine feasibility, cost, or time	69
Analyze scientific research data or investigative findings	27
Analyze technical data, designs, or preliminary specifications	47
Analyze test data	64
Calculate engineering specifications	64
Collect scientific or technical data	30
Communicate technical information	4
Compile numerical or statistical data	38
Conduct standardized qualitative laboratory analyses	62
Conduct standardized quantitative laboratory analyses	62
Confer with engineering, technical or manufacturing personnel	25
Coordinate engineering project activities	71
Create mathematical or statistical diagrams or charts	43
Delegate authority for engineering activities	73
Design electronic equipment	74
Design engineered systems	75
Design machines	82

Design waste recovery methods	85
Develop or maintain databases	30
Develop plans for programs or projects	31
Develop policies, procedures, methods, or standards	21
Develop tables depicting data	33
Direct and coordinate activities of workers or staff	3
Draw prototypes, plans, or maps to scale	57
Evaluate costs of engineering projects	70
Evaluate engineering data	60
Examine engineering documents for completeness or accuracy	62
Explain complex mathematical information	30
Follow safe waste disposal procedures	50
Improve test devices or techniques in manufacturing, industrial or engineering setting	75
Lead teams in engineering projects	73
Perform statistical analysis in physical science or geological research	71
Plan testing of engineering methods	72
Prepare reports	8
Prepare technical reports or related documentation	22
Provide analytical assessment of engineering data	75
Read blueprints	10
Read technical drawings	7
Resolve engineering or science problems	46
Test equipment as part of engineering projects or processes	67
Understand engineering data or reports	48
Use computer aided drafting or design software for design, drafting, modeling, or other engineering tasks	58
Use computers to enter, access or retrieve data	3
Use drafting or mechanical drawing techniques	50
Use government regulations	44
Use hazardous materials information	35
Use intuitive judgment for engineering analyses	72
Use knowledge of investigation techniques	16
Use knowledge of materials testing procedures	70
Use library or online Internet research techniques	21
Use long or short term production planning techniques	74
Use mathematical or statistical methods to identify or analyze problems	30
Use physical science research techniques	68
Use pollution control techniques	62
Use project management techniques	47
Use quantitative research methods	35
Use relational database software	26
Use scientific research methodology	21
Use spreadsheet software	18
Use technical regulations for engineering problems	61
Use word processing or desktop publishing software	17
Work as a team member	36
Write business project or bid proposals	48

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus Occupation to Associated Occupation: 57

Focus Occupation: Mining and Geological Engineers, Including Mining Safety Engineers (17-2151)
Associated Occupation: Materials Engineers (17-2131)

Tools and Technologies	Exclusivity
Business function specific software	1
Computer data input devices	2
Computers	1
Content authoring and editing software	1
Data management and query software	1
Industry specific software	1

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.